

AMENDMENT AND RESPONSE
Serial Number: 10/726,900
Filing Date: December 3, 2003
Title: MEMBRANE MODULES AND INTEGRATED MEMBRANE CASSETTES

Page 6
Case No: 58770US002
(102.0074US01)

REMARKS

Claims 1, 3-5 and 9-20 are currently pending in this application. By this Amendment, claims 1 and 17 have been amended.

§ 112 Rejection of the Claims

Claim 17 has been rejected to as being indefinite under 35 U.S.C. § 112 for failing to particularly point out and distinctly claim the subject matter which application regards as the invention because claim 17 depended from canceled claim 6. Claim 17 has been amended to depend upon claim 1 so as to remove the basis for this rejection. Withdrawal of this rejection is respectfully requested.

§ 102 Rejection of the Claims

Claims 1, 3-5, 15 and 18 have been rejected under 35 U.S.C. § 102(b) by Wataya et al., U.S. Patent No. 5,651,889, as presented in the last office action, mailed December 13, 2005. Applicants assert that the invention as presently claimed is not anticipated by Wataya et al because Wataya fails to teach a membrane module for transferring a constituent to or from a fluid, said module comprising at least two flat sheet membrane elements, each element having an interior portion and an outer surface, wherein the interior portion comprises a plurality of flow channels; and at least one primary manifold that is permanently attached to the membrane elements, wherein said primary manifold is in fluid connection with the flow channels of the membrane elements, and a space between the membrane elements; wherein said primary manifold comprises a first fluid flow channel that carries a first fluid to or from the interior portion of the membrane elements independent of flow from the interior portions to the outer surfaces of the membrane elements, and a second fluid flow channel that carries a second fluid to the space between the membrane elements, and wherein said second fluid flow channel is in direct fluid communication with the space between the membrane elements independent of flow from the interior portions to the outer surfaces of the membrane elements.

In addition, Wataya describes a membrane apparatus that includes a bubble supplying portion (col. 3, lines 21-29, and abstract). The apparatus as shown in FIG. 1 comprises a

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Page 7
Case No: 58770US002
(102.0074US01)

circulating tank 3 with a sludge inlet 301 and sludge outlet 302 (col. 6, lines 15-20). The Examiner considers the circulating tank 3 to be a manifold (office action, p. 3). In addition, the apparatus further comprises an aeration pipe 4 that delivers micro bubbles to the inter-membrane passages 108 (FIG. 1 and col. 6, lines 44-48).

Although the apparatus depicted in Wataya et al. has both a manifold and a means for delivering gas bubbles to the space between the membrane elements, the manifold itself does not comprise a means for delivering the gas bubbles to the space between the membrane elements. Instead, the Wataya apparatus uses a separate aeration pipe to deliver the gas bubbles. Furthermore, Wataya lacks a manifold comprising two flow channels – one for delivering a first fluid to the interior portion of the membrane elements and the second for delivering a second fluid, e.g. gas bubbles, to the space between the membrane elements, as recited in claim 1. Since this reference fails to teach all the elements of amended claim 1, it does not anticipate amended claim 1 or any of its dependent claims. Accordingly, withdrawal of this rejection is respectfully requested.

Claims 1, 3-5, 11, 12, 15, 16 and 18-20 have been rejected under 35 U.S.C. § 102(b) as being anticipated by Kopf, U.S. Patent No. 5,868,930 as presented in the last office action, mailed December 13, 2005. Applicants assert that the invention as presently claimed is not anticipated by Kopf for the same reasons asserted above. In addition, FIG. 18 and the associated description in column 13 of Kopf do not depict a primary manifold that is in fluid connection with the flow channels of the interior portion of the membrane elements and can perform the dual functionality of (1) delivering a first fluid to the interior portion the membrane elements and (2) delivering a second fluid, e.g. gas bubbles, to the space between the membrane elements. Thus, Kopf fails to disclose all of elements of amended claim 1 and its dependent claims. Accordingly, withdrawal of this rejection is respectfully requested.

Claims 1, 3-5, 15, 19 and 20 are rejected under 35 U.S.C. § 102(b) as being anticipated by either JP 07016591 or JP 11-244672, cited by the applicant as presented in the last office action, mailed December 13, 2005. JP 07016591 does not disclose a primary manifold that is in fluid connection with the flow channels of the membrane elements and provides both a means for delivering a first fluid to the interior portion of the membrane elements (i.e. through a first flow channel) and a means for delivering second fluid, e.g. gas bubbles, to the space between the

AMENDMENT AND RESPONSE
Serial Number: 10/726,900
Filing Date: December 3, 2003
Title: MEMBRANE MODULES AND INTEGRATED MEMBRANE CASSETTES

Page 8
Case No: 58770US002
(102.0074US01)

membrane elements (i.e. through the second flow channel), as is recited in amended claim 1. Thus, JP 070165921 fails to anticipate amended claim 1 or any of the claims dependent on amended claim 1. Similarly, JP 11-244672 does not disclose a manifold that is both in fluid connection with the flow channels of the membrane elements and provides a means for delivering second fluid, e.g. gas bubbles, to the space between the membrane elements (i.e. through the second flow channel). Thus, JP 11-244672 fails to anticipate amended claim 1 or any of the claims dependent on amended claim 1.

§ 103 Rejections

Claims 11, 12, 16, 17, 19 and 20 stand rejected under 35 USC § 103(a) as being unpatentable over Thompson et al or Wataya et al in view of Sirkar (4789468). Applicants respectively traverse this rejection.

Claims 11, 12, 16, 17, 19 and 20 all depend directly or indirectly from amended claim 1, which is patentable for the reasons given above. Thus, claims 11, 12, 16, 17, 19 and 20 are likewise patentable.

Allowable Subject Matter

Applicants thank the Examiner for indicating that claims 9 and 10 are allowed for the reasons indicated in the last office action and that claims 13 and 14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form.

Provisional Rejections

Claims 1-8, 11, 12 and 15-20 are provisionally rejected for obviousness-type double patenting as being unpatentable over claims 1 and 11 of copending Application No. 10/438090. Since this is a provisional rejection, applicants will consider filing a terminal disclaimer, if appropriate, when the conflicting claims are otherwise in condition for allowance.

Please grant any extension of time, if necessary for entry of this paper, and charge any fee due for such extension or any other fee required in connection with this paper to Deposit Account No. 50-3688.

AMENDMENT AND RESPONSE

Serial Number: 10/726,900

Filing Date: December 3, 2003

Title: MEMBRANE MODULES AND INTEGRATED MEMBRANE CASSETTES

Page 9

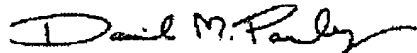
Case No: 58770US002
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Respectfully Submitted,

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